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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/604,410   | 07/18/2003  | Gary R. Doyle        | BUR920030024US1     | 1409             |
| 30449  | 7590        | 05/30/2006           | EXAMINER            |                  |
| SCHMEISER, OLSEN & WATTS<br>22 CENTURY HILL DRIVE<br>SUITE 302<br>LATHAM, NY 12110 |             |                      | LEUNG, WAI LUN      |                  |
|  |             |                      | ART UNIT            | PAPER NUMBER     |
|  |             |                      | 2613                |                  |

DATE MAILED: 05/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/604,410             | DOYLE ET AL.        |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Danny Wai Lun Leung    | 2613                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 March 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 24-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 24-43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 3/22/2006 have been fully considered but are moot in view of the new ground(s) of rejection.
2. Applicant argues, regarding to claim 34, that Boggess does not teach each and every feature of claim 34.

First, applicant argues that Boggess does not teach the feature “sending an address of a second core and control signal from a first core to a first optic controller”. Applicant cited Boggess col 15, lines 34-36 (“the addressing information is determined by the channel being used and not by the destination address information in the header”). Therefore, the address of a second core is in fact being sent in a form of channel being used, since each channel represents a specific address. Furthermore, applicant is directed to col 15, ln 36-38, which describe control signal, namely the header containing the length of the data and possible some error correction scheme, are also being sent.

Second, applicant argues that Boggess does not teach the feature “wherein an integrated circuit comprises the first core, the first optic controller connected to the first core, a plurality of optical transmitters under control of the first optic controller, the second core, a second optic controller connected to the second core, a plurality of optical receivers under control of the second optic controller”. The examiner thanks applicant for clarifying the claim interpretation in remark filed 3/22/2006. A 112 2<sup>nd</sup> rejection and a 103 rejection is used as a new ground of rejection in this office action.

Third, applicant argue that Boggess does not teach the feature “decoding, by the first optic controller, the address” of the second core. Applicant is directed to col 15, ln 34-42, which states “... *the addressing information is determined by the channel being used ... The gate controller 210, by contrast, regulates the flow of this data over the optical interconnect, and is responsible for preventing loss of packet data due to contention for the same channels by multiple CPUs’ messages.*” Therefore, Boggess clearly pointed out that the first optic controller (gate controller) decodes the address (by inspecting the channel being used, which determines the addressing information, send the data to the CPU if the data is in the channel that is addressed for the current node, or forward the data to another node over a specified channel if it is addressed for another node).

3. Regarding to claims 43, 37, 38-42, applicant did not make any arguments against the references Chappel, Habbab, or Wu, and failed to clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited.

#### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 34 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicant is directed to **MPEP 2106 [R-3] II C**, which states:

The subject matter of a properly construed claim is defined by the terms that limit its scope. It is this subject matter that must be examined. As a general matter, the grammar and intended meaning of terms used in a claim will dictate whether the language limits the claim scope. Language that suggests or makes optional but does not require steps to

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be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation. The following are examples of language that may raise a question as to the limiting effect of the language in a claim:

- (A) statements of intended use or field of use,
- (B) "adapted to" or "adapted for" clauses,
- (C) "wherein" clauses, or
- (D) "whereby" clauses.

This list of examples is not intended to be exhaustive. >See also MPEP § 2111.04.<

Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. *E-Pass Techs., Inc. v. 3Com Corp.*, 343 F.3d 1364, 1369, 67 USPQ2d 1947, 1950 (Fed. Cir. 2003) (claims must be interpreted "in view of the specification" without importing limitations from the specification into the claims unnecessarily). *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969). See also *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) ("During patent examination the pending claims must be interpreted as broadly as their terms reasonably allow.... The reason is simply that during patent prosecution when claims can be amended, ambiguities should be recognized, scope and breadth of language explored, and clarification imposed.... An essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be removed, as much as possible, during the administrative process.").

The grammar and claim language in the wherein clause "wherein an integrated circuit comprises the first core..." as it is appear in the current form fails to further limit the subject matter being claimed, since the limitation "an integrated circuit" is not mention in the previous clause; furthermore, without appropriate punctuations and/or spacing, it is unclear as to whether the limitations following the comma ("the first optic controller connected to the first core, a plurality of optical transmitters under control of the first optic controller, the second core, a second optic controller connected to the second core, a plurality of optical receivers under control of the second optic controller") are part of the wherein clause.

Furthermore, it is noted, on page 9 of the reply filed 3/22/2006, applicant tries to clarify the claim language by asserting an argument that the examiner did not expressly made, namely

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“Boggess teaches an integrated circuit comprising: the CPU 200 and gate controller 210 of a first node and the CPU 200 and gate controller 210 of a first node 250; and the CPU and gate controller of a second node (i.e., Node 2).” Such phasing and punctuations are not appeared in the office action dated 12/20/2005. It should be amended into the claims if it is applicant’s intention to incorporate such limitations into the claim.

Appropriate corrections in the claim language for claim 34, lines 1-8 is suggested below:

34. An optical transmission method, comprising:

sending an address of a second core and control signals from a first core to a first optic controller in an integrated circuit, said integrated circuit comprises:

the first core,

the first optic controller connected to the first core,

a plurality of optical transmitters under control of the first optic controller,

the second core,

a second optic controller connected to the second core,

a plurality of optical receivers under control of the second optic controller, and

a plurality of optical channels, wherein each optical channel extends from one of the optical transmitters to one of the optical receivers;

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Number 6,674,971 to Boggess et al., in view of US Patent Application Publication Number 2004/0215929 to Floyd et al.

Regarding to claim 34, Boggess discloses an optical transmission method, comprising:  
sending an address of a second core and control signals (*col 15, ln 31-38*) from a first core (*applicant defined core to be "a particular section of logic" in paragraph 46 of the specification; CPU 200 in fig 6A is a particular section of logic*) to a first optic controller (*210, fig 6A*), wherein an integrated circuit (*fig 6A*) comprises the first core (*CPU 200*), the first optic controller (*210, fig 6A*) connected to the first core (*col 15, ln 38-42*), a plurality of optical transmitters (*240, fig 6A*) under control of the first optic controller (*col 15, ln 49-57*),

Boggess further teaches a configuration of a ring topology comprising the first core (*CPU in node 1, fig 7A*), the first optic controller (*Gate Controller in fig 7A*) connected to the first core, a plurality of optical transmitters (*transmitter 240 in node 1, fig 7A*) under control of the first optic controller, the second core (*CPU in Node 2, 360, fig 7A*), a second optic controller (*gate controller in Node 2, 360, fig 7A*) connected to the second core, a plurality of optical receivers (*receivers in Node 2, 360, fig 7A*) under control of the second optic controller (*col 15, ln 49-57*), and a plurality of optical channels (*channels 1-4, fig 7A*), wherein each optical channel extends from one of the optical transmitters to one of the optical receivers (*col 15, ln 49-52*);

decoding, by the first optic controller, the address (*col 15, ln 27-42; "... the addressing information is determined by the channel being used ... The gate controller 210, by contrast, regulates the flow of this data over the optical interconnect, and is responsible for preventing*

*loss of packet data due to contention for the same channels by multiple CPUs' messages.", which means that the gate controller decodes the address by inspecting the channel being used, which determines the addressing information);*

after said decoding, selecting a first optical channel of the plurality of optical channels *(channels 1-4, fig 7A)* for subsequently transmitting an optical signal over the first optical channel, wherein the first optical channel extends from a first optical transmitter of the plurality of optical transmitters and a first optical receiver of the plurality of optical receivers, and wherein said selecting is performed by the first optic controller *(col 17, ln 8-15; the first gate controller send the data to the CPU if the data is in the channel that is addressed for the current node, or select a channel to forward the data to another node if it is addressed for another node. );*

after said selecting, transmitting data from the first optic controller to the first optical transmitter *(col 15, ln 52-54);*

encoding into optical data, by the first optical transmitter, the transmitted data *(col 15, ln 54-57);* and

transmitting the optical data from the first optical transmitter to the first optical receiver via the first optical channel *(col 15, ln 58-67).*

Bogges does not disclose expressly wherein an integrated circuit comprises the first core and the second core in a ring topology as discussed above. Floyd, from the same field of endeavor, teaches an integrated circuit comprising two cores *(paragraph 24; core 42a, 42b, fig 2)*, each core is connected to a controller *(52a, 52b, fig 2; paragraph 25)*; Floyd further teaches a ring topology similar to that of Bogges' can be configured in one module *(fig 3)*. Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to



configure Boggess's first core, first optic controller connected to the first core, a plurality of optical transmitters under control of the first optic controller, second core, a second optic controller connected to the second core, a plurality of optical receivers under control of the second optic controller, and a plurality of optical channels, wherein each optical channel extends from one of the optical transmitters to one of the optical receivers onto an integrated circuit as taught by Floyd. The motivation for doing so would have been to improve communication for system level commands to different chip components such as processor cores (*Floyd, paragraph 11*).

As to claim 35, Boggess further discloses wherein said selecting takes into account a channel length of each optical channel of the plurality of optical channels (*col 15, ln 49-67*).

As to claim 36, Boggess further discloses wherein said selecting takes into account one or more defective optical channel of the plurality of optical channels (*col 17, ln 66-col 18, ln 12*).

8. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Number 6,674,971 to Boggess et al. , in view of US Patent Application Publication Number 2004/0215929 to Floyd et al., as applied to claim 34 above, and further in view of US patent Number 6,081,527 to Chappel et al.

Regarding to claim 43, the combination of Boggess and Floyd discloses the method as discussed above regarding claim 34. It does not disclose expressly wherein the method further comprises after said transmitting the optical data: handshaking between the first optical transmitter and first optical receiver to communicate between the first optical transmitter and first optical receiver such that said transmitting the optical data was successful. Chappel, from

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the same field of endeavor, teaches a method comprises after transmitting the optical data: handshaking between the first optical transmitter and first optical receiver to communicate between the first optical transmitter and first optical receiver such that said transmitting the optical data was successful (*col 5, ln 48-67*), wherein the handshaking comprises exchanging messages between the optical transmitter and first optical receiver over an optical channel of the plurality of optical channels (*col 6, ln 1-11*). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to use the second optical channel of the plurality of optical channel in the combination of Boggess and Floyd's system for handshaking between the first optical transmitter and first optical receiver to communicate between the first optical transmitter and first optical receiver such that said transmitting the optical data was successful after transmitting the optical data, as taught by Chappel, wherein the handshaking comprises exchanging messages between the optical transmitter and first optical receiver over the second optical channel of the plurality of optical channels. The motivation for doing so would have been to ensure that no data are lost by performing handshaking between the optical transmitter and the first optical receiver.

9. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Number 6,674,971 to Boggess et al., in view of US Patent Application Publication Number 2004/0215929 to Floyd et al., as applied to claim 34 above, and further in view of US Patent Number 4,797,879 to Habbab et al.

Regarding to claim 37, the combination of Boggess and Floyd discloses the method as discussed above regarding claim 34. Boggess further discloses wherein the method further

comprises: Detecting a collision with the optical data during said transmitting the optical data (*col 17, ln 66-col 18, ln 3*); the combination does not disclose expressly that responsive to said detecting, re-transmitting the optical data from the first optical transmitter to the first optical receiver via a second optical channel of the plurality of optical channels. Habbab, from the same field of endeavor, teaches a method of detecting a collision with optical data during transmitting the optical data, and responsive to said detecting, re-transmitting the optical data from the first optical transmitter to the first optical receiver via a second optical channel of the plurality of optical channels (*col 4, ln 7-34*). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to re-transmitting the optical data from the first optical transmitter to the first optical receiver via a second optical channel of the plurality of optical channels, as taught by Habbab, responsive to Boggess's detecting of a collision in the combination of Boggess and Floyd's method. The motivation for doing so would have been to resolve the collision problem in the combination of Boggess and Floyd's method by re-transmitting the optical data from the first optical transmitter to the first optical receiver via a second optical channel of the plurality of optical channels such that the transmission system is faster and more efficient.

10. Claims 38-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Number 6,674,971 to Boggess et al., in view of US Patent Application Publication Number 2004/0215929 to Floyd et al., as applied to claim 34 above, and further in view of US Patent Number 5,946,116 to Wu et al.

Regarding to claim 38, the combination of Boggess and Floyd discloses the method as discussed above regarding claim 34. It does not disclose expressly wherein the first optical channel comprises a first optic channel oriented in a first direction, a second optic channel segment oriented in a second direction that is perpendicular to the first direction, and a redirection termination disposed between the first and second optic channels for causing the optical data propagating in the first optic channel in the first direction to be diverted into the second optic channel to propagate in the second optic channel in the second direction. Wu, from the same field of endeavor, teaches an optical transmission method wherein a first optical channel (*input 500, fig 10*) comprises a first optic channel oriented in a first direction (*polarization Rotator array 700, fig 10, oriented vertically*), a second optic channel segment oriented in a second direction that is perpendicular to the first direction (*704, fig 10, oriented horizontally*), and a redirection termination disposed between the first and second optic channels (*PBS 800, fig 10*) for causing the optical data propagating in the first optic channel in the first direction to be diverted into the second optic channel to propagate in the second optic channel in the second direction (*as described in col 8, ln 56 – col 9, ln 26; this is similar to applicant's fig 10 and fig 2A as disclosed in the specification*). Therefore, it would have been obvious for a person of ordinary skill in the art at the time of invention to apply Wu's teaching wherein the first optical channel comprises a first optic channel oriented in a first direction, a second optic channel segment oriented in a second direction that is perpendicular to the first direction, and a redirection termination disposed between the first and second optic channels for causing the optical data propagating in the first optic channel in the first direction to be diverted into the second optic channel to propagate in the second optic channel in the second direction, to route

the combination of Boggess and Floyd's optical signal from one channel to another. The motivation for doing so would have been to route optical signal from one channel to another while having low inter-channel crosstalk and low insertion loss (*Wu, col 10, ln 41-47*) by having a first optical channel comprises a first optic channel oriented in a first direction, a second optic channel segment oriented in a second direction that is perpendicular to the first direction, and a redirection termination disposed between the first and second optic channels for causing the optical data propagating in the first optic channel in the first direction to be diverted into the second optic channel to propagate in the second optic channel in the second direction.

As to claim 39, Wu further discloses wherein the redirection termination is slant-shaped (*as shown in fig 10*);

As to claims 40-42, absent any teaching of criticality, it would have been an engineering design choice to make the redirection termination as described above as slant-shaped, curved, hemispherical-shaped, or cone-shaped. Furthermore, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Swain et al., 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; Minnesota Mining and Mfg. Co. v. Coe, 69 App. D.C. 217, 99 F.2d 986, 38 USPQ 213; Allen et al. v. Coe, 77 App. D.C. 324, 135 F.2d 11, 57 USPQ 136.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Danny Wai Lun Leung whose telephone number is (571) 272-5504. The examiner can normally be reached on 9:30am-7:00pm Mon-Thurs.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DWL  
May 22, 2006



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